



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,685	11/25/2003	Bernard O. Geaghan	59411US002	6157

32692 7590 02/06/2007
3M INNOVATIVE PROPERTIES COMPANY
PO BOX 33427
ST. PAUL, MN 55133-3427

EXAMINER

NGUYEN, KIMNHUNG T

ART UNIT	PAPER NUMBER
----------	--------------

2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/721,685	Applicant(s) GEAGHAN ET AL.	
	Examiner Kimnhung Nguyen	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This application has been examined. The claims 1-13 are pending. The examination results are as following.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 4, 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bird et al. (US 5,959,617 cited by Applicant).

As to claim 1, Bird et al. discloses in fig. 1, a light-sensitive user input device (10) comprising:

a co-planar array of light-sensitive devices (X-Y array of light sensing element 14) disposed to sense light transmitted through an input surface of the input device, nearest adjacent light-sensitive devices having a center-to-center spacing of no more than a maximum distance; a stylus (light pen 12) configured to emit a light beam detectable (see photoresistor or photodiode, see col. 3, lines 64-66) by the devices (14), the light beam has an obvious exhibiting a cross-sectional profile (because the light beam can consider one part in the area) having a known shape characterized by an intensity variance across the beam profile (see col. 7, lines 58-64), wherein the light beam exhibits a size (see spot light 20, fig. 2) at the plane of the devices when the stylus is contacting the input surface, and electronics coupled to the light-sensitive

Art Unit: 2629

devices to determine the position of the light beam (see a switch operable either manually by the user or indirectly in response to pressure upon the pen, see col. 4, lines 53-62 for details of the explanation). Bird et al. discloses the light sensitive devices having a center-to center spacing has a distance, and the of the devices has a distance, and the position of the light beam has a distance (because each of the light sensitive element should have a distance, see fig. 2).

However, Bird et al. does not disclose the light sensitive devices having a center-to-center spacing of no more than a maximum distance, the size of the devices is greater than maximum distance; and the position of the light beam is within a spacing that is less than the maximum distance.

It would have been obvious for Bird et al.'s system to have the light sensitive devices having a center-to-center spacing of no more than a maximum distance, the size of the devices is greater than maximum distance; and the position of the light beam is within a spacing that is less than the maximum distance as claimed since such a modification would have involved a mere change in the range/size of a system. A change in range/size is generally recognized as being within the level of ordinary skill in the art, absent unexpected results.

See In re Rose, 105 USPQ 237 (CCPA 1995), and

In re Reven, 156 USPQ 679 (CCPA 1968).

As to claim 3, claim 3 depends on claim 1 and is rejected on the same reasons of claim 1.

Bird et al. discloses further the light beam has a circular shape (see circular spot 20, see col. 3, lines 29-30), and the detectable size is the diameter of the circular shape (because circular spot has a radius).

Art Unit: 2629

As to claim 4, claim 4 depends on claim 1, and is rejected on the same reasons of claim 1. Bird et al. discloses further the light beam has an elliptical shape (elliptical spot 20, fig. 5), and the detectable size is an axis of the elliptical shape (because spot 20 of fig. 5 can through an axis).

As to claim, claim 7 depends on the claim 1 and is rejected on the same reasons of claim 1. Bird et al. discloses further, wherein the electronics further configured to determine beam angle (see spot 20 has angle shape, fig. 3).

As to claim 8, claim 8 depends on claim 1 and is rejected on the same reasons of claim 1. Bird et al. discloses further, wherein the beam angle is determined by comparing a measured shape of the beam as detected by the light-sensitive devices to the known shape of the beam (see col. 6, lines 50-55).

As to claim 9, Bird et al. discloses further, wherein the electronics are further configured to detect stylus tilt direction (see col. 6, lines 50-54).

As to claim 10, Bird et al. does not disclose that wherein the stylus tilt is determined by detecting a shadow cast on the devices attributable to the stylus.

It would have been obvious to have the stylus tilt is determined by detecting a shadow cast on the devices attributable to the stylus because when the stylus put down on the surface then will appear a shadow cast on the screen.

4. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bird et al. (US 5,959,617) in view of Valley et al. (US 2004/0071066).

As to claim 5, Bird et al. does not disclose, wherein the known intensity variance comprises a beam intensity that is highest at the beam center and that continuously trails off to

zero intensity away from the beam center.

Valley et al. discloses in fig. 2, a beam size of an emitter system comprising a beam size (110), a beam intensity (110) that is highest at the beam center (see Valley, see 0032) and that continuously trails off to zero intensity away from the beam center.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the beam intensity that is highest at the beam center and that continuously trails off to zero intensity away from the beam center as taught by Valley et al. into the light-sensitive user input device of Bird et al. for producing the claimed invention because this would provide the profile of the beam power dictates how the intensity of the power of the emitted beam decreases away from the center of the beam (see Valley, see 0032).

As to claim 6, Bird et al. does not disclose the intensity variance comprises an annular beam intensity profile that increases in intensity from the center of the beam to a maximum intensity away from the beam center and then trail off to zero intensity with further distance away from the beam center.

Valley et al. discloses in fig. 2, a beam size of an emitter system comprising an annular beam size (110), a beam intensity (110) that increases in intensity from the center of the beam to a maximum intensity away from the beam center and then trail off to zero intensity with further distance away from the beam center (see 0032).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the a beam size of an emitter system comprising an annular beam size, a beam intensity that increases in intensity from the center of the beam to a maximum intensity away from the beam center and then trail off to zero intensity with further distance away from

Art Unit: 2629

the beam center as taught by Valley et al. into the light-sensitive user input device of Bird et al. for producing the claimed invention because this would provide the profile of the beam power dictates how the intensity of the power of the emitted beam decreases away from the center of the beam (see Valley, see 0032).

5. Claims 2 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bird et al. (US 5,959,617) in view of Geaghan (US 6,133,906).

As to claim 11, Bird et al. discloses in fig. 1, a method of determining the position of a light beam at an input surface, comprising:

providing a co-planar array of light-sensitive devices (14) disposed to sense light transmitted through the input surface

emitting the light beam with a known shape characterized by a cross-sectional profile (see col. 7, lines 58-64) having a known intensity variance, the light beam having a spot size sufficient (spot light 20, fig. 2) for the light beam to be detected by at least two of the light-sensitive devices (light sensing element 14, fig. 1) when the light beam is directed through the input surface;

detecting the light beam by at least two of the light-sensitive devices (14); and determining the position of the light beam having center-to-center distance between nearest adjacent light-sensitive devices during the detecting step using the known intensity variance of the light beam (see variable of the light beam with different the spot light 20, such as elliptical shape or rectangular shape, figs. 5 and 8).

However, Bird et al. does not disclose that the position of the light beam to an accuracy that is less than the center-to center distance between nearest adjacent light-sensitive devices.

Art Unit: 2629

It would have been obvious for Bird et al.'s system to have the position of the light beam to an accuracy that is less than the center-to center distance between nearest adjacent light-sensitive devices as claimed since such a modification would have involved a mere change in the range/size of a system. A change in range/size is generally recognized as being within the level of ordinary skill in the art, absent unexpected results.

See In re Rose, 105 USPQ 237 (CCPA 1995), and

In re Reven, 156 USPQ 679 (CCPA 1968).

Bird et al. also does not disclose the light beam using interpolating methods based on the known intensity variance of the cross-sectional profile of the light beam.

Geaghan discloses in fig. 1, a system and method of measuring the position of the stylus to a computer in formation display device comprising an interpolating method between the signals from adjacent current carrying electrodes (see Geaghan, col. 7, lines 49-52), Geaghan also discloses a light pen senses the change in light (or intensity variance of the light beam) from the CRT phosphor as the electron beam passes within the light pen's field of view (see col. 1, lines 22-24),

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the interpolation method between the signals from adjacent current carrying electrodes as taught by Geaghan into the method of determining the position of the light beam for producing the claimed invention because this would provide the interpolation between the signals form adjacent current carrying electrodes, and also possible to transmit from the stylus and receive to the electrodes, or to alternately transmit from, then receive to the electrodes and thus to achieve fine resolution of the display system (see Geaghan, col. 7, lines 49-54).

Art Unit: 2629

As to claim 12, claim 12 depends on the claim 11 and is rejected on the same reasons of the claim 11, Bird et al. discloses further the step of determining beam angle from comparing a detected light beam shapes to the know shape (see col. 6, lines 50-55).

As to claim 13, claim 13 is similar claim 10 and discussed above. Claim 13 also depends on claim 12 and is rejected on the same reasons of claim 12.

As to claim 2, claim 2 depends on claim 1 and is rejected on the same reasons of claim 1. Further, Bird et al. does not disclose the position of the light beam using interpolation methods based on the known intensity variance of the light beam. Geaghan discloses the interpolation methods based on intensity variance of the light beam as discussed in claim 11.

Response To Arguments

6. Applicant's arguments filed on 11/27/06 have been considered but they are not persuasive.

Applicant states "claims recite a user input device that uses a co-planar array of light-sensitive devices to sense light emitted by a stylus. The stylus emits a light beam that has, "a cross- sectional profile having a known shape characterized by an intensity variance across the beam profile." The input device further includes, "electronics coupled to the light-sensitive devices and configured to determine the position of the light beam to within a spacing that is less the maximum distance," where the maximum distance is the center-to-center spacing of nearest adjacent light-sensitive devices in the array. Bird does not teach or suggest using a beam profile having a known intensity variance that can be used to determine the position of the light beam to an accuracy that is better than the accuracy that would be afforded given the center-to-center spacing of the light-sensitive devices".

Art Unit: 2629

Examiner respectfully disagrees because Bird discloses the X-Y array of light sensing element to sense light emitted by a stylus pen (15, see fig. 1, 2), The stylus emits a light beam that has a cross-section profile having a known shape characterized by an intensity variance across the beam profile, because Bird discloses the spot shape is arranged in the path of the parallel light beam to produce a parallel light beam whose cross-section, perpendicular to the beam axis, thus Bird teaches an intensity variance across the beam profile.

Applicant also states that "Valley discloses determining emitter beam size in data storage applications. Valley does not relate in any way to user input devices, and adds nothing that would cure the deficiencies of the Bird reference".

Examiner respectfully disagrees because Bird discloses a light-sensitive input devices, and Bird does not disclose a beam intensity that is highest at the beam center and continuously trail off to zero intensity away from the beam center. Valley discloses a beam intensity that is highest at the beam center and continuously trail off to zero intensity away from the beam center, therefore, Valley did cure the deficiencies Bird's reference. For these reasons, the rejections are maintained.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

Art Unit: 2629

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimnhung Nguyen whose telephone number is (571) 272-7698. The examiner can normally be reached on MON-FRI, FROM 8:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached on (571) 272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



RICHARD HJERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Kimnhung Nguyen
Patent Examiner
January 29, 2007